

REMARKS

Claim Objection

Claim 1 has been objected to for lack of antecedent basis for the limitations of “said reformer manifold space” and “said conductive fin” in lines 17 and 25, respectively, as presented in the application.

Antecedent basis for the limitation of the reformer manifold space can be found in line 8, as presented in the application, of claim 1. The limitation “across said conductive fin (38)” in line 25 of the claim is hereby deleted, thereby obviating the objection.

Claim Rejection under 35 USC § 103

Claims 1-4 have been rejected under 35 USC 103(a) as being unpatentable over Pettit (US 2004/0047777) in view of Valensa (US7069981). In accordance with claim 1 and shown in Figs. 1-3, the instant invention heat exchanger (14) has axially extending reformatte passages (42) and coextensive nested ambient air passages (44) arrayed in a mutually heat conductive fashion. As ambient air enters the air passages (44), the air moves in one axial direction, into the reformer manifold space (24) and into the reaction chamber (18) to create hydrogen reformatte. Concurrently, the hydrogen reformatte moves axially in the opposite direction out of the reaction chamber (18) and through the heat exchanger reformatte passages (42), in continuous heat exchanging relationship with the oppositely flowing ambient air over substantially the entire axial length of said heat exchanger (14). The ambient air is continually warmed before reaching the reaction chamber (18), and the reformatte is continually cooled before exiting the heat exchanger (14).

Valensa does not overcome the short comings of Pettit. Shown in Figs. 10 and 11 of Valensa, is a circumferential array of heat exchange tubes 100 having interiors 102 for receiving a first fluid 52 and exteriors 104 over which the second fluid 54 is directed (column 8, lines 56-62). The radial tube arrangement creates a cross/counterflow and a cross/parallel flow arrangement through the heat exchanger. In contrast, Applicants’ invention is a pure counter-flow device where ambient air entering the air passages moves in one axial direction and concurrently, the hydrogen reformatte moves axially in the opposite direction in a continuous heat exchanging relationship. Valensa teaches away from Applicants’ invention of pure counterflow.

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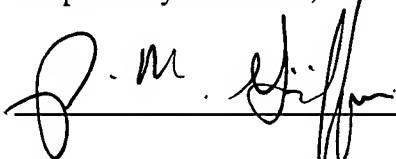
Claim 1 is patentably distinguishable over Pettit in view of Valensa and claims 2-4 ultimately depend upon claim 1. Applicants respectfully request the withdrawal and reconsideration of the rejection for claims 1-4, and the claims be allowed.

Conclusion

It is believed, in view of the amendments and remarks herein, that all grounds of objection and rejection of the claims have been addressed and overcome, and that all claims are in condition for allowance. If it would further prosecution of the application, the Examiner is urged to contact the undersigned at the phone number provided.

The Commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-0831.

Respectfully submitted,



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